Assessing stock status instead of fishing mortality reduces the need for information on growth

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Assessing stock status instead of fishing mortality reduces the need for information on growth

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The aim of a stock assessment is to estimate the size of the stock and the fishing mortality F. Management uses this information to assess the status of the stock by comparing the stock size or fishing mortality to biological references points, typically Bmsy and Fmsy, i.e., is the stock above or below the reference points. The status of the stock is then used to trigger possible management actions. Here we focus on the status of the stock related to fishing pressure, F/Fmsy. We show how both quantities, F and Fmsy, are roughly proportional to the growth rate of individuals in the stock. Therefore, while information on growth rate is crucial to estimate F and Fmsy individually, it has less importance when the status of the stock F/Fmsy is estimated. This further implies that size-based assessments, which are usually very uncertain because they do not estimate growth rate, may be as accurate as age-based assessments when they are evaluated against their ability to estimate the status of the stock, and not just fishing mortality. Finally, estimating the status of the stock will provide the information that is needed by management directly, and will incorporate uncertain estimates into Fmsy, which are usually ignored. We therefore urge a rethink of the basic stock assessment procedure to consider moving beyond assessing biomass and fishing pressure towards estimating the status of the stock directly.

Keywords: Fmsy, size-based assessments, age-reading

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